Network Operations Analysis Capability (NOAC)

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N6M/TSG

9 March 2000

Motivation

- Fleet needs a capability to evaluate new developments in networking
  - IT-21
  - Navy Wide Internet
  - Automated Digital Network System
- Create analysis tools
  - Network performance/impact of new technologies
  - For use by Communication Officers
- Enhance return on investment with our limited dollars

Objectives of NOAC

- Optimize Fleet communication planning and acquisition
- Data from operational systems/network
  - standardize data format in accordance with network standards
  - historical log of traffic statistics
  - populates M&S environments
- Develop an end-to-end process to provide operational data to M&S tools

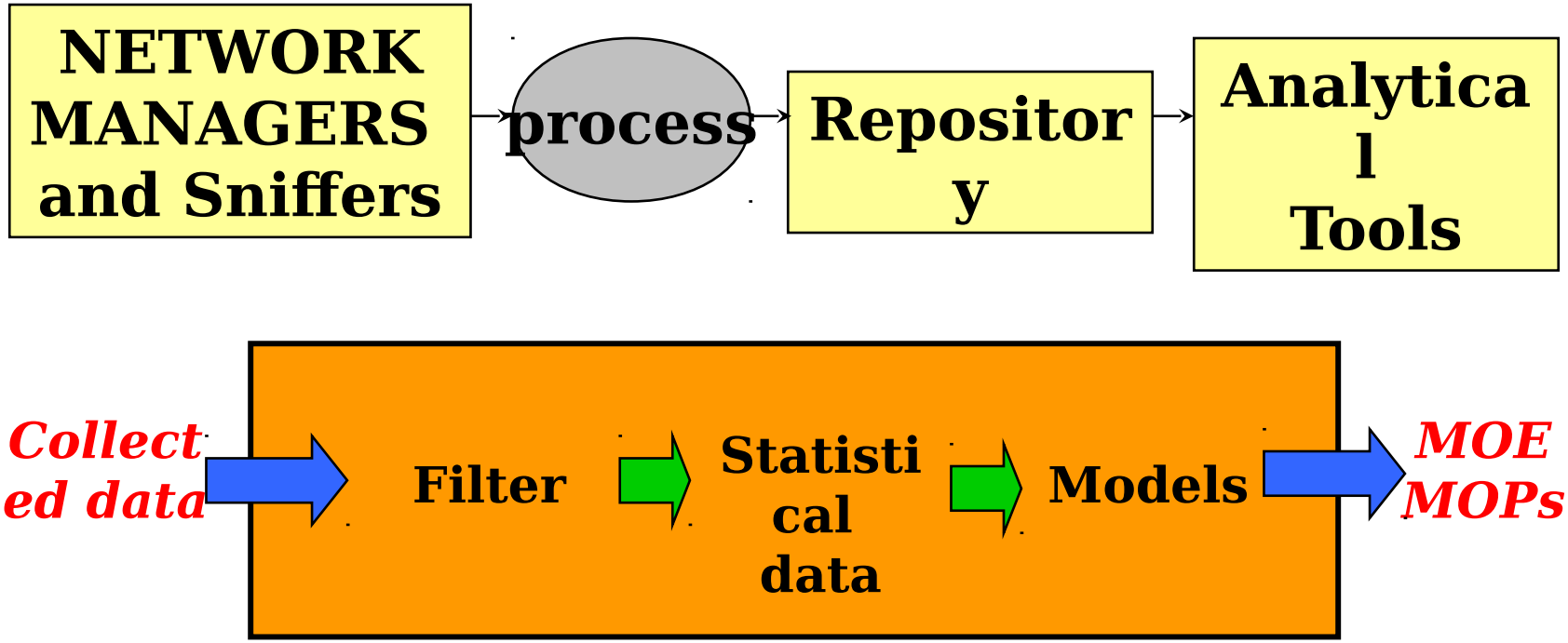
Objectives of NOAC

- Obtain/compile authoritative data for M&S
  - Accurate, operational network information
    - topologies
    - voice, video, and data characteristics
  - Closer ties between M&S and operating networks
- Historical archives of traffic data
  - Trends/updates
  - Proactive maintenance of networks
  - Cost avoidance

NOAC Working Group

- **LTC Patrick Vye (J6I)**
- **Dr. Albert Legaspi**
- **Dr. Nikhil Dave’ (SSC-SD)**
- **Mr. John Walsh (SPAWAR 05)**
- **LTC Steve Lisi (J6I)**
- **Major Jim Fritz (J6T)**
- **Tom Lam (DISA)**
- **CDR Jay Caler (N61)**
- **Truman Parmale (OSD)**

Concept


NETWORK MANAGERS and Sniffers
process
Repository
Analytical Tools
Collected data
Filter
Statistical data
Models
MOE MOPs

Related Initiatives

- Joint Network Management System (JNMS)
  - Suite of network management devices and remote monitoring tools
  - Joint terrestrial and mobile networks
- Joint C4ISR Architecture/Analysis Planning System (JCAPS) (Mr. Truman Parmele,OSD C3I)
  - suite of tools that provides C4ISR operational, systems and technical architectures
    - Information Exchange Requirements
    - communication architecture analysis tool - NETWARS

Each programs provide "as is" view of C4ISR networks and architectures

Related Initiatives

- Network Warfare Simulation (NETWARS)

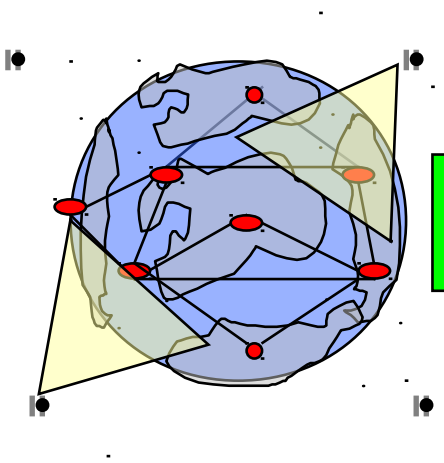
  (Colonel Patrick Vye JCS J6I)
  - J6 C4ISR communication initiative
    - analyze communication burden
    - provide an analysis capability for communication planning
    - analyze impact of new technology on operation networks

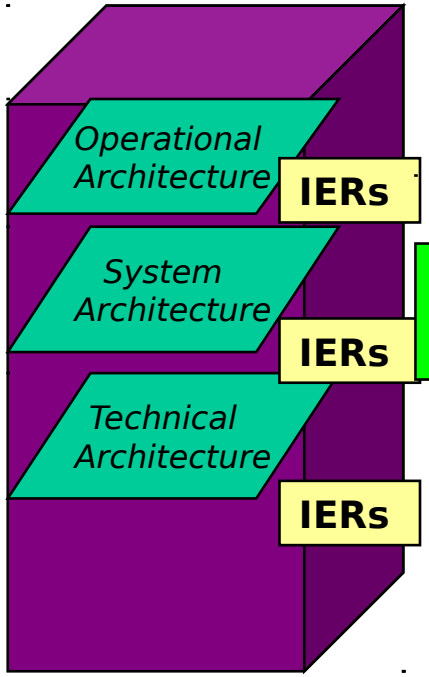
End-to-End Analysis Capability

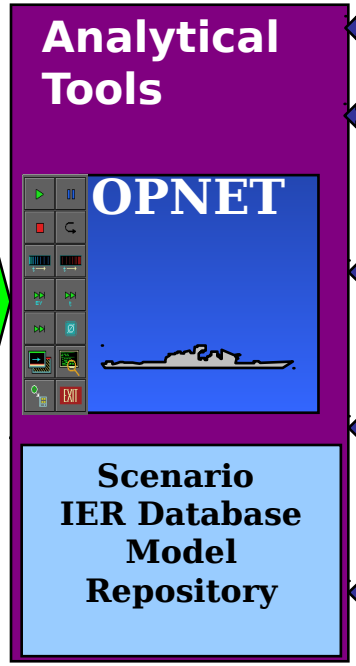
Global Network Management

C4ISR Architecture Database

Modeling, Simulation and Analysis



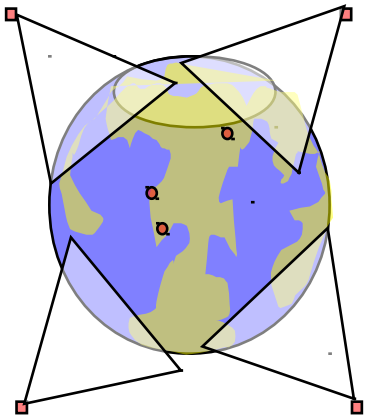




- **MOP**
- **Trade-off Analysis**
- **Channel Utilization**
- **Failure Analysis**
- **“What if” Analysis**

JNMS **JCAPS** **NETWARS**

Phase 4: Implementation



JNM S

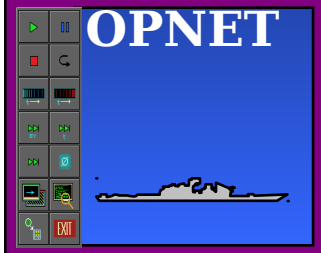
JCAPS

Operational Architecture — IER — α_{11} α_{1m}

System Architecture — IER — α_{ij} α_{ik}

Technical Architecture — IER — α_{rl} α_{r} $_{m}$

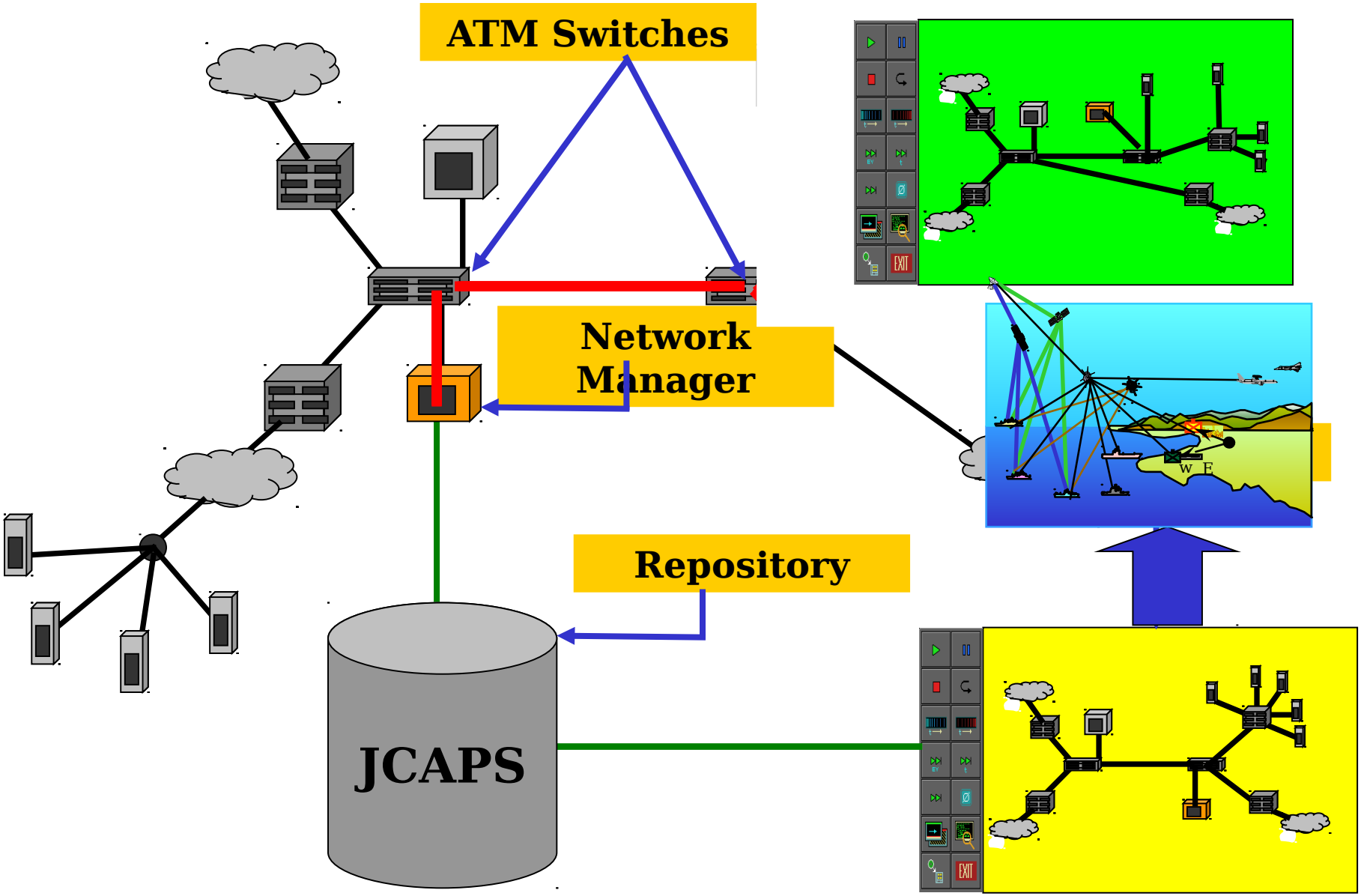
Analytical Tools



Scenario
IER Database
Model
Repository

NETWARS

- MOP
- Trade-off Analysis
- Channel Utilization
- Failure Analysis
- "What if" Analysis


ATM Switches
Network Manager
Repository
JCAPS
EXIT
W E
EXIT

Utilization of Analysis Tool

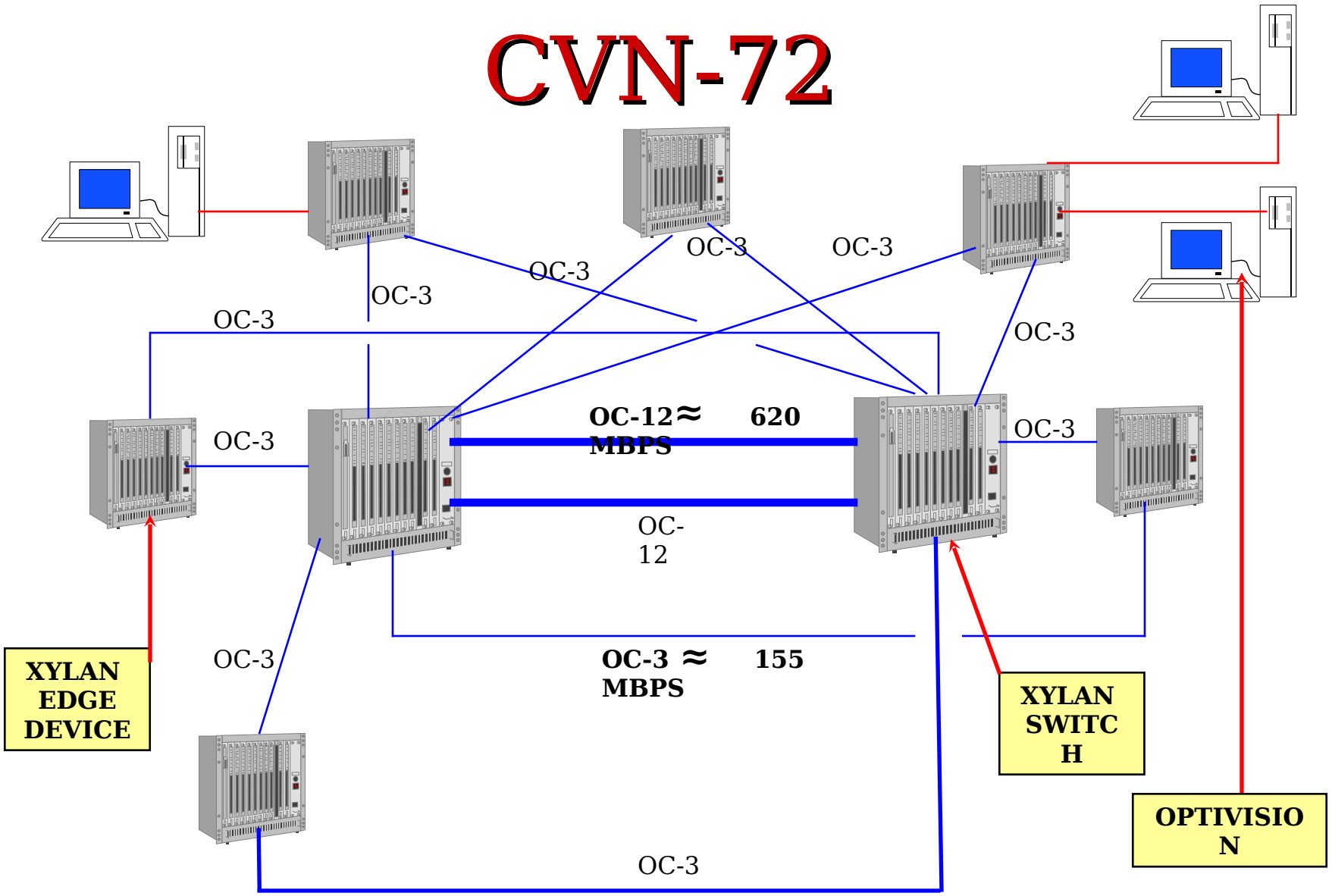
- NCTC (Captain Allison) and Third Fleet (CDR Scott Miller)
  - NETWARS toolkit to devise communication resource allocation plans
    - enhance communication resource assignment accounting for the channel conditions
    - analyze impact to existing communication performance
- SPAWAR 05 (Mr. Dennis Rilling)
  - analyze impact of inserting new networking technology on Navy's terrestrial and mobile networks
  - validate C4ISR architectures and functional Battle Group descriptions

Utilization of Analysis Tool

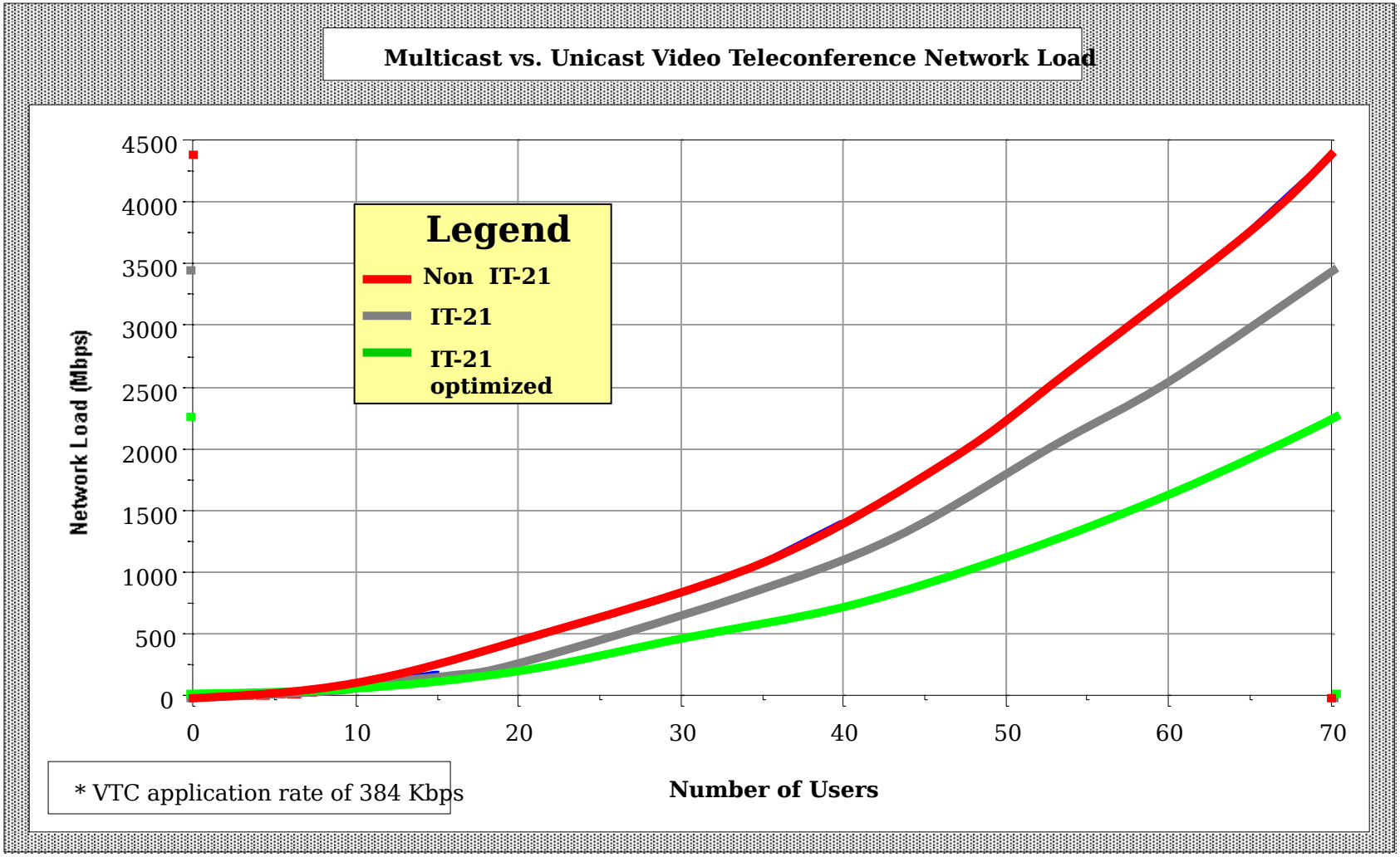
- OPNAV N6K (Captain Larry Stack)
  - provide analysis capability to program managers
  - analyze cost/capability trade-offs

Example of Capability

IT-21 CONFIGURATION
CVN-72



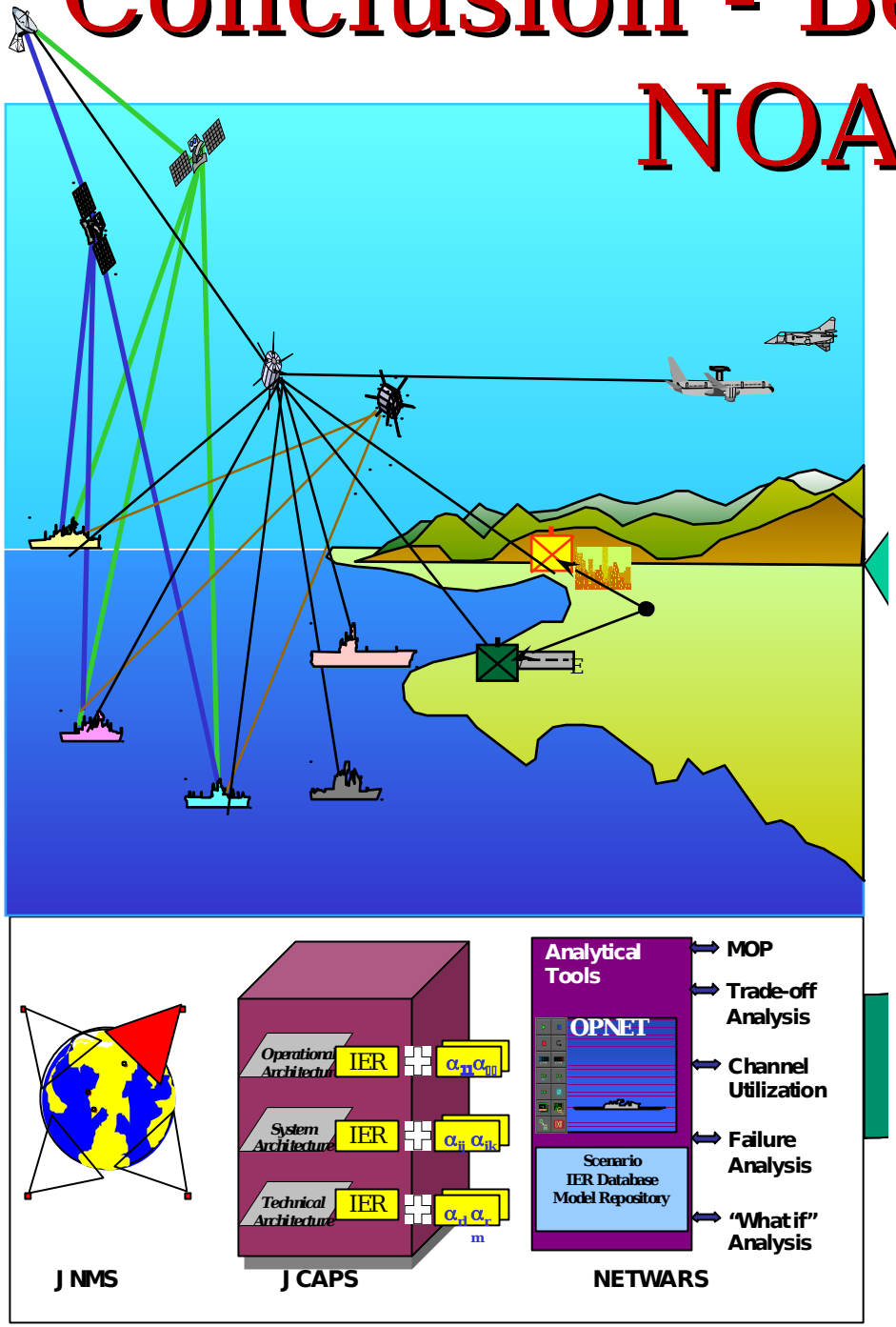
Bandwidth Utilization



Status

- USS Coronado prototype in progress
  - requirements collection
  - network blueprint study
  - SPAWAR PD-13 coordination
  - Brief RADM McGinn, COMTHIRDFLT (March)
- SIPRNET/NIPRNET prototype in progress led by DISA

Conclusion - Benefits from NOAC



- Leveraging assets derived from Joint programs, NOAC provides benefits to each program which thereby enhances return on investment
  - **optimization of IT networks**
  - **optimization of C4ISR architecture**